

REPORT

CD NO.

50X1-HUM

DATE DISTR. 10 August 1950

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SUPPLEMENT TO
REPORT NO.

COUNTRY Yugoslavia

SUBJECT The Aleksandar Rankovic
Torpedo Factory, Rijeka

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THIS IS UNEVALUATED INFORMATION

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1. Location: On sea front in western part of Rijeka. Telegraphic address: ARAN, Rijeka.
2. Security: All workers in the factory are issued a factory identity card, light green in color, measuring about 8 x 12 cms, bearing the photograph and the signature of the worker and signed by the UDB chief in the factory. In practice, these cards are rarely ever examined and it is believed that many workers do not trouble to carry their cards with them. The only security check known to have been carried out was in 1947, previous to a visit by Tito to the factory. No vetting is carried out on prospective employees. The factory is guarded continuously by a section of 30 Yugoslav soldiers armed with rifles or Sten type sub-machine guns under command of a lieutenant.
3. Staff: A total of about 2,000 workers are employed in the factory. In addition there are 200 soldiers employed in general laboring duties and 150 women, 50 of whom are employed in clerical work, and the remainder operating light machine tools. There are about 20 German Technicians employed in the factory. They all work in one section and are concerned with the conversion of Junker aircraft engines for use in small motor launches. Two shifts are worked daily. Usually about two or three hours over time is worked per day, only about two thirds of which is paid. Workers' pay ranges from 4,500 dinars per month for unskilled workers to 6,000 dinars per month for skilled workers. Workers are permitted to take one meal per day in the factory canteen, the cost of which is 45 dinars. There are an unspecified number of apprentices at the factory who work four hours in the factory and four hours in the apprentices' school.
4. Production
 - a. Torpedoes: Both aerial and naval torpedoes are at present being produced. These are of two patterns, one in which the pistons are

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arranged radially (German type) and the other in which the pistons are arranged horizontally (Whitehead type). Since the end of the war, only five new torpedoes have been constructed. The rest of the production, about 17 torpedoes per month, consists of reconstructed salvaged torpedoes. About 70 percent of the monthly production is passed as efficient after trial.

Details of the Whitehead naval torpedo

Length:	5.35 meters
Maximum diameter:	522 mm.
Engine:	Whitehead type (horizontal pistons)
Speed:	40 to 43 knots
Propellers:	2 four-bladed

Whitehead aerial torpedo

Length:	4.5 meters
Maximum diameter:	422 mm.
Propellers:	2 three-bladed

The torpedo is fitted with two jettisonable wings at the rear end.

German naval type torpedo

Length:	7.5 meters
Maximum diameter:	535 mm.
Engine:	Radial
Speed:	Unknown
Propellers:	Still under test and type not yet decided.

- b. Conversion of Junker aircraft engines: The engine is first dismantled and all defective parts replaced. It is then tested on a test bench and if it still does not function properly, it is again stripped and any defective parts replaced. When the engine is in working order, a 2 to 1 gear is fitted to the driving shaft. Finally, the original Packard engines are removed from the motor torpedo boats, carefully packed in cases marked XP, and the modified Junker engine fitted in its place. It is believed that some 50 craft are being modified in this way per month. The first modified Junker engine was mounted on 15 August 1949 and the motor torpedo boats so fitted have reached a speed of 43 miles an hour.

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Renovation of torpedoes: This work is carried out in the following steps:

- 1) Checking of motors
- 2) Complete inspection of the torpedo guide and gyro-scoping steering apparatus
- 3) Repair of pistol
- 4) Regulation of the hydrostatic apparatus and serve motor
- 5) Repair of the torpedo head
- 6) Examination and testing of the compressed air cylinder (tested at a pressure of 220 atmosphere)

6. Manufacture and mounting of the torpedo guide: The frame and the junction support are forged while all other parts are machined. After being forged the frame and junction support are checked for faults and sent to department 307 (see Appendix-A) where the air channels are cut and the base of the junction supports machined. Later, copper pipes for air and oil inlets are fitted. The rotary device is machined to the nearest thousandth of an inch and after being checked, it is sent to department 316 to have the turbine channels cut before being polished, finally checked and stored ready for mounting. The axle and spring arm are sent to department 305 for tempering, after which they are checked by a "brinell" process. Both the axle and spring arm are machined and stored ready for mounting. The mounting of the torpedo guide is carried out in the following manner:
 - a. 12 Inox steel ball bearings are fitted to each end of the frame
 - b. Axles are screwed in and finally adjusted
 - c. The rotary device is mounted
 - d. The spring arm is synchronised with the turbine channels
 - e. Regulation of the torpedo guide (department 318). Compressed air is forced through the inlet pipe; when the pressure exceeds 200 atmospheres the spring arm opens and the compressed air causes the rotating device to revolve at the required 23,000 revolutions per minute. If all is in order, the apparatus is placed in a steel case and despatched to the launching ground for mounting in the torpedo.
7. Torpedo Store: The torpedo store is located in the torpedo mounting department (see Appendix-A) and has a maximum capacity of 150 torpedoes in wooded crates.
8. Distribution of finished torpedoes: The ultimate destination of the finished torpedoes is unknown, but when completed they are placed in unmarked wooden boxes and taken away by sea.
9. Testing of torpedoes: The torpedoes to be tested are taken to a concrete ramp on the shore line where there are two firing tubes. After the torpedoes have been adjusted for a range of about 2 kms, they are fired. There are 4 rafts situated at 300 meters, 500 meters, 700 meters and 1,000 meters from the firing point and along the path of the torpedo.

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On each raft stands a man with a red flag who signals whether the torpedo is behaving normally or not. After the torpedo has exhausted its power, it is towed back to the factory by a launch and any necessary adjustments made. About 70 percent of the torpedoes listed are found to be satisfactory- the most common defects being connected with the speed setting and anti-roll device.

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11. Source of Power: The electric power requirements of the factory, 8,000 to 10,000 kilowatts per day, are met by two large generators salvaged from the liner REX, sunk at the end of the war near Capodistria.

12. Layout of the Factory and machinery There are six main sections organized as follows:

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Dept No.	Process	Equipment	No. of employees
300	Carpentry and wood moulding	2 band saws	about 25 men
301	Foundry	2 furnaces 2 drying plants	about 100 men
302	Aluminium, lead and bronze foundry	10 sand blasting machines (8 in working order) 2 metal saws 1 mobile furnace 2 drying plants 2 American polishing machines	about 90 men
303	The tinsmith's dept.	2 cutting machines and 1 slotting machine	about 50 men
305	Thermic processing dept.	2 furnaces 3 re-heating furnaces 3 other furnaces	about 5 men
304	One steam hammer	4 furnaces 1 steam press	about 3 to 5 men
336	Chemical laboratory		about 3 to 5 men
b. <u>Section Two</u>			
306	Lathe Department	25 parallel lathes (only 15 in operation on account of lack of skilled personnel)	about 50 men

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Dept No.	Process	Equipment	No. of Employees
		4 cylinder lathes 5 turning frames (all out of order) 2 boring machines	
307	Stamping and Rivetting Dept.	20 milling machines (15 only in operation on account of lack of skilled labor) 10 vertical milling machines 2 horizontal spindle milling machines (one working) 1 special Flat milling machine (not working)	about 50 men
308		26 hexagonal turret lathes	about 10 men and 20 women
316	Precision turners	20 parallel lathes 6 milling machines (3 working) 1 guiding machine (?)	about 30 men
317 and 318		10 test benches for torpedo hydrostatic and gyroscopic control apparatus 1 apparatus is tested per day	about 20 men (of whom 5 are specialists) (the specialists are employed in Dept 318)
c. <u>Section Three</u> (Dismantling, adjustment and cleaning)			
309	Dismantling and cleaning	70 hand grinding machines	about 20 men
310, 311, and 312	German torpedo Dept.		about 30 men
313	Propellers	3 automatic propeller manufacturing machines	
314	Hydraulic brake dept.	2 machines (operating only one day every fortnight)	about 10 men
315	Finishing dept.	2 propeller grinding machines	about 50 men
d. <u>Section Four</u> (Mounting dept)			
219	General laborers	No machinery	about 7 men
222		2 lathes, 2 milling machines 2 electric metal saws	about 20 men
320	Compressed air and diesel motor mounting department	2 emery wheels	about 50 men

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Dept. No.	Process	Equipment	No. of Employees
321	Dismantling, cleaning and adjusting dept. for Junkers Jumo Motors		about 200 men
e. <u>Section Five</u>			
131	Tool making dept.	20 lathes 20 milling machines (10 working) 7 grinding machines (3 working) 10 drilling machines	about 150 men
132 and 133	Design department		about 100 men
190	Factory maintenance department		about 50 men
191 and 333	Control and Supervision		about 20 men
334	General tool and store department		about 20 men

f. Section Six

060	Department 060	Painters	about 15 men
061	Bricklayers, maintenance and General Works dept.		about 30 men
034	Electrical maintenance		about 30 men
111	Experimental department		

All the buildings in the factory are of cement and girder constructions and are of one floor only.

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13. Abbreviations for component parts for torpedoes (see Appendix): The abbreviations given below are always used in the factory when speaking of the various component parts. The list also gives the departments in which the part concerned is processed.

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I.G.	"Involucro di guerra" (warhead) obtained from the Preluka salvage dump. Departments 303,306,307,308 and 317
A.C.	"Accierino" (?Pistol) Departments 303,306 and 307
C.C.	"compartimento centrale" (Central compartment)
S.E.	"Serbatoio" (Compressed air cylinder) Department 306

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G.S. "Guidasiluri" (Torpedo guide ? gyroscope)
Departments 304, 304,306,307,308,121,316,
317 and 318

S.M. "Serbomotore" (Servomotor)
Departments 300,302,305,306,307,308,121,
316,317, and 318

P.S. "Pistone" (Steel Piston) made in the factory
from salvaged material
Departments 305,306 and 307

A.A. "Testa autoalleggeribile" (? self-easing head)

P.P. "Parte posteriore" (Rear part)
Made in the factory from salvaged material.
Departments 303,304,306 and 307

V.P. "Vasi petroli" (Fuel tanks) Capacity: 1 liter
each. Departments 302,306,307 and 311

C.R. "Crociera" (holder for hydrostatic apparatus)
Departments 303,311 and 312

E.L. "Eliche" (Propellers)
Departments 306,314 and 315

M. C. "Macchina" (Motor)
Departments 300 to 309,316,317 and 131

V.S. "Valvola sicurezza" (Safety valve)
Departments 316 and 305

Z.V. "Zavorra" (Ballast) Department 301

A.R. "Armatura" (Torpedo frame)
Departments 303,306 and 307

A.I. "Apparate idrostatico" (Hydrostatic apparatus)
Departments 302, 309, 311, 316, 317, and 318

A. "Asse motore" (driving shaft)
Departments 303,307 and 306

V. "Viti" (Screws) Departments 307 and 308

D. "Dadi" (Nuts) Departments 307 and 308

A. "Asse" (Axle) Departments 307 and 308

B. "Bulloni" (Bolts) Departments 307 and 308

M. "Molle" (Springs) Department 311

T. "Tappi" (Taps) Departments 307 and 308

B. "Bastardini" (Bastard nuts)
Departments 306,307,308,316 and 131

C.S. "Callotte supplementari" (Supplementary cylinder covers)
Departments 303 and 306

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14. Torpedo Dump at Preluka: All salvaged torpedoes for renovation at the factory come from the torpedo dump at Preluka (MR. It.1:100.000 Sht 53 B,2840) situated in an old German bunker about half way between Rijeka and Abbazia. Material is collected from the dump [] twice a month. 50X1-HUM
15. Motor Torpedo Boats (M.A.S.) at the factory: Generally there are about 3 MTBs anchored close to the factory, in September 1949 there were 6. It is believed that these MTBs are based on Pola.
16. Efficiency and production graphs: [] the following details as to the efficiency and production graphs maintained in the factory: 50X1-HUM
- a. Efficiency graph The planned working hours per day, calculated at about 10,500, are multiplied by the number of working days planned for the month, giving a monthly target total of approximately 273,000 working hours. At the end of the month the number of hours actually worked is calculated and this total is divided by the monthly total of planned hours, from which is obtained for the graph the monthly percentage figure of the planned total which had actually been worked. Absentees and illness rates are calculated for planning purposes at about 0.2 percent.
- b. Three of these are kept; one showing the planned production based on the planned working hours in any month; one showing the actual production and one showing the percentage of production lost through absenteeism and lateness for work et cetera. The figures as published for August-October 1949 showed estimated loss of production due to unjustified absence et cetera of 3 percent. In actual fact, the figure was nearer 21 percent.
17. Personalities:
- | | | |
|---------------------|--|----------|
| Velco Botica | Secretary of the Rijeka Branch of the Communist Party. [] | 50X1-HUM |
| Bozo Miletic | UDB representative. [] | |
| Giuseppe Cesarec | Chief of the lathe department. Member of the Communist Party. [] | 50X1-HUM |
| Milijenko Cesarec | Chief of the Personnel Office. Member of the Communist Party. [] | 50X1-HUM |
| Bruno Faragona | Chief of the Technical Office. Member of the Communist Party. [] | 50X1-HUM |
| Casimiro Gaslijevic | Director of the Factory since January 1949. Communist. [] | 50X1-HUM |
| Ugo Gassin | Director of all factories in the Rijeka area. [] | 50X1-HUM |
| Ilic | Chief of Section Five since September 1949. [] Member of the Communist Party. [] | 50X1-HUM |
| Ivan Ugovic | Chief of the Planning Department since October 1948. [] | 50X1-HUM |

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Giovanni Kucera	Workshop Technical Director since January 1949. Member of the Communist Party. [REDACTED]	50X1-HUM
Margic	Chief of Section Two. Non-Communist. [REDACTED] At one time was in charge of the foundry, then the experimental section, transferred in May 1949 to the workshops.	50X1-HUM
Mikulic	Technical director since January 1949. Non-Communist. Previously director of the 3 Maj shipyards. [REDACTED]	50X1-HUM
Angelo Palmieri	Administrative Director since 1948. Member of the Communist Party; [REDACTED]	50X1-HUM
Major Perisa	President of the Rijeka branch of the Communist Party. Has an office in the factory. [REDACTED]	50X1-HUM
Veljko Petrinovic	Secretary to Ugo Gassin and previously Director-General of the factory until January 1949. [REDACTED]	50X1-HUM
Karl Radloff	Chief of the German technicians working in the factory. [REDACTED]	50X1-HUM
Capt. Ivan Renko	UDB chief of the factory. [REDACTED]	
Edwin Steinbach	A German technician and engine designer working in the factory. Non-Communist. [REDACTED]	50X1-HUM
Zurmann	Chief of Section Four. [REDACTED]	

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